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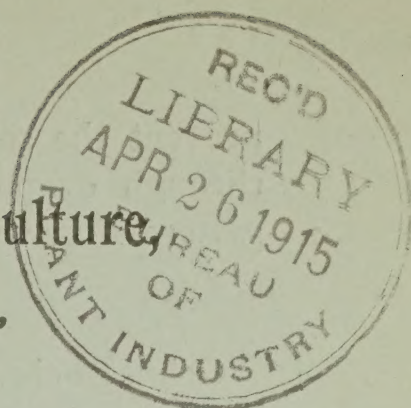


## United States Department of Agriculture

BUREAU OF PLANT INDUSTRY,

Forage-Crop Investigations,

WASHINGTON, D. C.

CRIMSON CLOVER (*Trifolium incarnatum*).

Crimson clover is frequently called scarlet clover, German clover, French clover, Italian clover, Egyptian clover, carnation clover, etc. It is a native of southern Europe and is grown considerably in southern and western Europe. It has proved especially adapted to the lighter sandy soils of the eastern part of the United States where the winters are not too severe. It is grown principally in the Middle Atlantic States, but to some extent as far north as Connecticut, and often succeeds in Kentucky, Tennessee, and on the sandy soils of Michigan. The dry autumns in Kentucky and Tennessee work against the success of this crop, and the cold winters in Michigan are responsible for numerous failures. It is likely to fail if sown on land too poor to make 15 bushels of corn to the acre. On such land it is better to turn under cowpeas or soy beans until the fertility is somewhat restored.

## PREPARATION OF THE GROUND FOR SEEDING.

The seed bed for crimson clover should be firm, moist, well settled, and fine on top. Any efforts that may be expended to conserve the soil moisture previous to seeding are usually justified, especially if there be any lack of rainfall during the month before or the month following seeding. Where the clover is seeded in an intertilled crop, such as corn, cotton, or tomatoes, the customary cultivation received by these crops is ordinarily sufficient to put the ground in proper condition for seeding the crimson clover. Where grain-stubble land is plowed in preparation for the clover, a month or six weeks after plowing are ordinarily required for the soil to settle sufficiently to make a proper seed bed, since after plowing at least one soaking rain, which compacts the soil and fills it with moisture, is essential to the proper preparation of the seed bed for crimson clover. If the ground be disked, a much shorter time and less rain are required for the proper settling of the seed bed. The best method of retaining the moisture in the seed bed is to harrow or give shallow cultivation shortly after each rain. A fine soil mulch on the surface will largely



prevent the soil just beneath the surface from losing its moisture through evaporation. Such surface tillage should, of course, be given before seeding the crimson clover.

#### SEEDING.

Crimson-clover seed may be sown broadcast by hand, with a wheelbarrow "sheep-trough" seeder, or with any of the familiar types of rotary seeders. Shallow seeding is usually best, especially in clay soils. An inch in sandy soils and a half inch in clay soils appear to be about the right depths of covering, except in times of drought. A light harrowing will usually cover the seed about the proper depth. Sometimes it is necessary to delay seeding for several weeks, awaiting a suitable rain to put the ground into proper condition. The ideal time to seed is just before a rain, as the seed germinates promptly and the young plants are soon large enough to continue growth, even though no rain falls for some time. The seed should ordinarily be sown about 60 days before the first killing frost may reasonably be expected. In Virginia it is usually seeded about the middle of August, and farther south a correspondingly later date of seeding is best, since otherwise the hot sun is apt to kill the plants when they first come up. If seeded later than about 8 or 10 weeks before frost, the plants are unable to make enough growth before cold weather to enable them to give the best results. Ordinarily crimson clover may be seeded with wheat. If this is done, a somewhat lighter seeding of grain than is usually sown should be drilled in and the clover broadcasted and harrowed in. Both are ready to cut for hay about the same time. The white-blooming strain is somewhat larger and matures about two weeks later than the ordinary strain and is therefore adapted to seeding in mixture with winter oats for hay. If the season is not too dry, crimson clover may also be seeded in standing corn or cotton. A 1-horse cultivator with narrow teeth is ordinarily the most satisfactory implement for covering the seed. The seed is sometimes sown from horseback, and under such circumstances it is necessary to tie small cloth bags over the ears of the horse to keep out the flying seed. If the seed is grown locally, it is likely to be in the hull. Seed in the hull must be scattered by hand and considerable care used to distribute the hulls evenly on the ground. About three 5-bushel gunny sacks full of well-packed seed in the hulls are necessary to seed an acre. If the cleaned hulled seed is sown, 16 pounds to the acre are sufficient.

#### INOCULATION.

If the ground has never grown crimson clover successfully, it is desirable to inoculate the seed. This can be done by obtaining soil from a near-by crimson-clover field and mixing it with the seed,



pound for pound. Sunlight is very injurious to the inoculating germs. The seeding should, therefore, be done on a cloudy day or just after sundown; or the seed may be sown just in front of the harrow even on a sunny day. The one scattering the seed should walk just behind or at the side of the harrow, however, and scatter the seed the width of the harrow and immediately behind the horses' hoofs. If soil is not convenient, pure cultures furnished free by the United States Department of Agriculture may be used. In this event, it is suggested that a bottle of the culture be applied to a few pounds of the seed and a small patch seeded to supply soil for inoculating a larger area the next season.

#### EFFECT ON THE LAND.

The great value of crimson clover lies in the fact that it can be seeded in the late summer, after the regular crops are made, or at least at their last cultivation, and will make its growth in the fall and early the following spring. It can thus be plowed under in time for such crops as corn or cotton, and in this way a money crop can be obtained each year in addition to the leguminous crop for soil improvement and forage. This clover is also of great value as a cover crop, especially in orchards or on truck farms. It furnishes a green cover for the fields during the winter, thus preventing the washing of the soil and the reduction of soil fertility by leaching. Another benefit occurs when the crop is plowed under, since a large quantity of humus and fertilizing material is turned back to the soil. This is especially true when all of the crop is plowed under as green manure. Often, however, the field is left standing for hay or seed, thus leaving only the stubble and roots in the field. The stubble and roots appear in many cases, however, to be almost as effective in soil improvement as is the plowing under of the entire crop, except where the soil is rather low in humus. Being a legume, crimson clover is able to add considerable nitrogen to the soil.

The physical condition of the soil is also materially benefited by the growth of crimson clover. The sandy soils are increased in humus, thus being made more retentive of moisture. On the other hand, the stiff heavy-clay soils are rendered more open and friable. On the ordinary corn ground a crop of crimson clover will usually increase the yield of the succeeding corn crop from 10 to 15 bushels to the acre.

#### HAY.

Crimson clover will produce from 1 to 2 tons of hay to the acre. It is ready to cut for hay as soon as the field is crimson or scarlet with the blooms. If left until the flowers begin to fade, the short hairs on the heads and stalks become stiff and in this state are more



likely to form hard hair balls in the intestinal tracts of horses or mules to which the hay may be fed.

#### PASTURE.

Crimson clover, if seeded fairly early, will make enough growth by December 1 to permit light pasturing with calves, hogs, or colts. It is best, however, to retain at least a 2 or 3 inch growth during the winter, to act as a soil cover and to insure a vigorous growth in the late winter and early spring, when it will furnish an abundance of early grazing. Cattle and sheep are somewhat subject to bloating if pastured on crimson clover when it is wet with rain or dew, or if they are turned on the field with empty stomachs, especially when not fully accustomed to the clover pasture.

#### ROTATIONS.

It is possible to seed crimson clover after practically any of the ordinary farm crops, such as grain or potatoes, which can be removed from the land at least three months before frost. By prompt plowing or disking and frequent harrowing, grain-stubble land can be prepared for crimson clover.

The ground from which early potatoes have been removed is even more favorable for the establishment of a stand of crimson clover. The residual effect of the fertilizers used on the potatoes is partially responsible for this, while the well-settled seed bed, which requires only leveling and harrowing, also presents favorable conditions for the crimson-clover seedlings.

Crimson clover may also be seeded in corn or cotton in September, and when so seeded will form a good winter cover for the land. The field can then be prepared in the spring in time for making a seeding of either corn or cotton. In this way a money crop can be obtained each year in addition to the crop of crimson clover. If the corn is to follow the crimson clover, there will be ample time to allow it to stand for a hay crop or even for a seed crop. On the other hand, if cotton is to follow the crimson clover the ground can not ordinarily be put in proper shape for the early planting of cotton unless the crimson clover be plowed down before it has made much growth in the spring. Under such conditions it is suggested that the old cotton middles be broken out and the cotton planted in the new furrows. The crimson clover should be left undisturbed between the cotton rows until the subsequent cultivations turn under the well-grown clover sod.

#### SEED PRODUCTION.

Since crimson clover must be reseeded every year, the problem of obtaining seed for reseeding purposes is likely to be serious. If there



is produced on each farm enough seed for reseeding the fields, it will not be necessary to buy seed in late summer, at a time when both cash and credit are usually scarce. It will not always be possible to produce home-grown seed for reseeding one's own farm each season, but at least a few farmers in each community should give attention to the matter of growing seed for local use. The seed of crimson clover ripens uniformly and does not require any expensive machinery to harvest it. If only a small quantity is needed, it can be mown and flailed out on canvas or it can be stripped by hand at a labor cost of 3 to 5 cents per pound for the seed. If more seed is desired than can be easily gathered by hand, it is easy to make a homemade stripper for the purpose. Briefly, this consists of a series of wooden teeth fastened in front of a receptacle to hold the seed as it is stripped. The narrow strippers can be operated by hand, while the wider ones can be attached to an old pair of buggy wheels or to the rear axle of an ordinary buggy. Full instructions for making these homemade strippers can be obtained free upon application to the United States Department of Agriculture. It is highly important that wherever stands of crimson clover are present, as much seed as possible be saved, as otherwise it is probable there will not be enough seed in the country for sowing the areas in the Southern States which by all means should be sown to crimson clover.

If more detailed information regarding this crop is desired, application should be made to the Secretary of Agriculture for the free Farmers' Bulletins on crimson clover.

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